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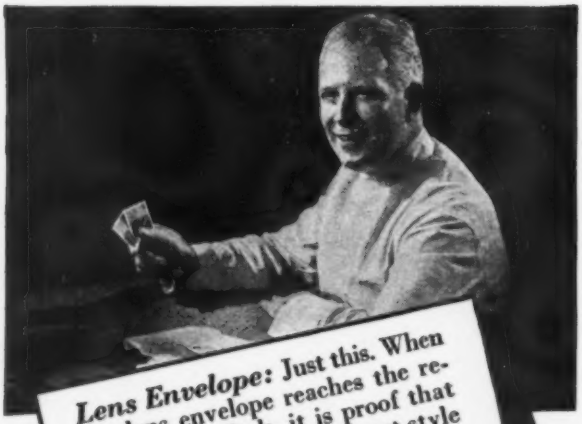

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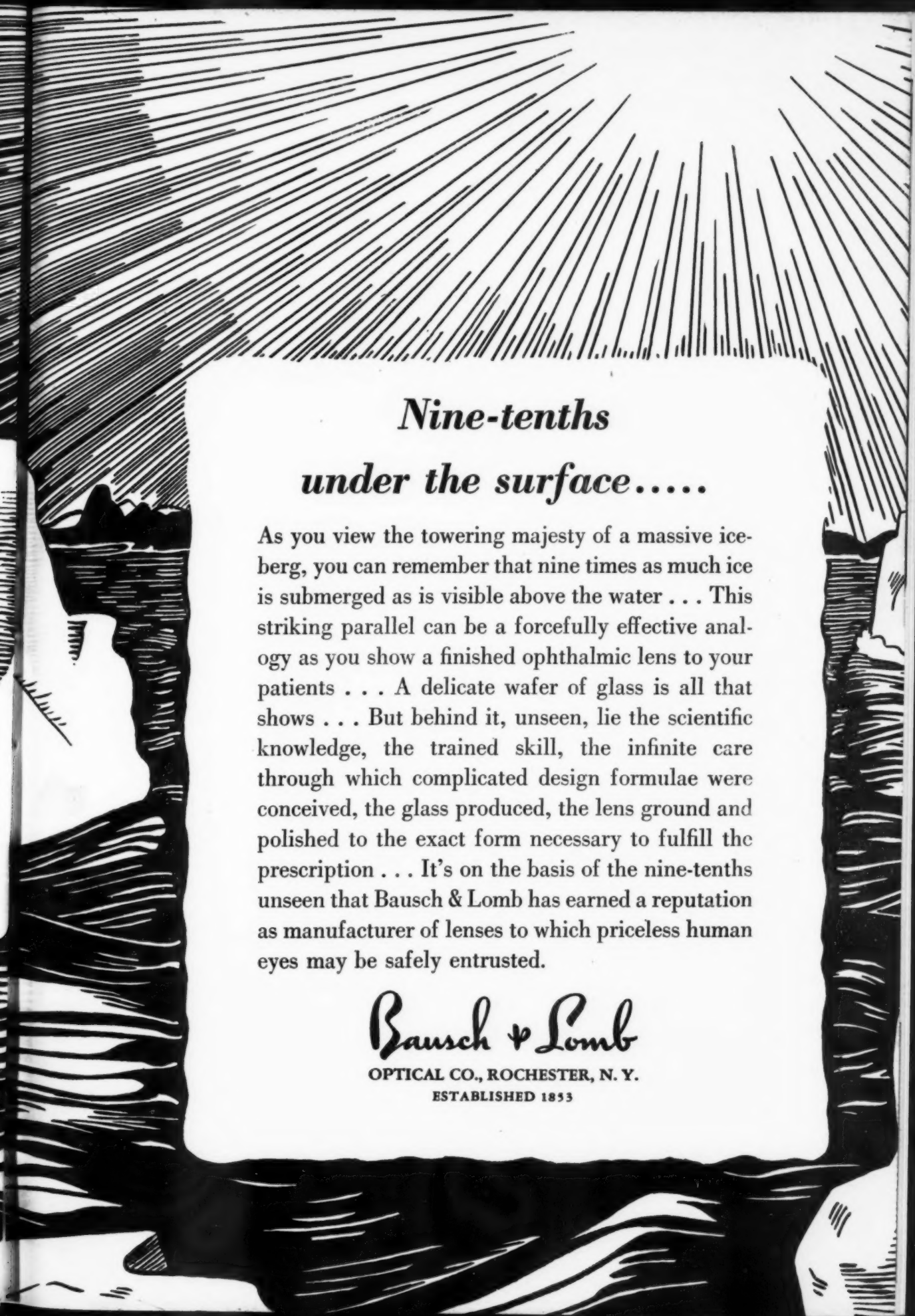

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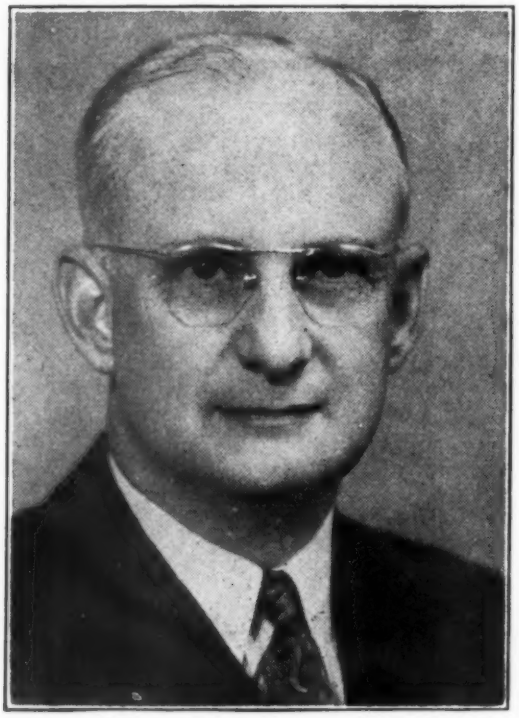

Arthur Prentice Wheelock

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NORMAL VALUES OF VISUAL FUNCTIONS AND THEIR APPLICATION IN CASE ANALYSIS*

Parts I, II and III†

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PART I

A modern eye examination, as we all know, comprises a great deal more than a visual acuity test and determination of a lens which will improve it as much as possible. As a matter of fact, it really includes three separate examinations or component parts and a scientific analysis of the information obtained from them. In this paper we are going to briefly review the purpose of these three component parts of an eye examination, the tests comprising each and what they measure, and present a new table of norms, or normal values, for each of the tests taken, based on recent research.

A test is worthless unless we have some scientifically sound normal, or yardstick, with which to compare its results, and this must be obtained by careful research on a relatively large number of control cases. Individual hunches, armchair philosophy, and limited experience based on a few cases are not enough.

We must also have a sound conception of what a normal is. In analyzing a group of 100 cases, for example, all of whom are comfortable, happy, and visually efficient, we find that the measurements of any function we care to investigate will follow certain laws of distribution.

In the first place, we find that there is an average for all cases, although actually very few members of the group may manifest find-

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ings of that particular value. We cannot, therefore, say that only those of the group whose measurements are equal to the average are normal and all others too high or too low, any more than we can say that the average weight of the Ohio State football team is 195 pounds and that any player less than that is too light, and anyone weighing more is too heavy. As a matter of fact, there may be only a very few on the team actually weighing 195 pounds.

The next thing to observe in our analysis is that the various individuals being tested group themselves around the mean about equally divided on either side and with the great majority very close to it, with fewer and fewer as we go farther out and relatively few isolated cases at the extreme limits. This is called "normal distribution," and can be graphically portrayed by a "normal distribution curve," in which the findings are grouped in greatest density about the mean, and taper off symmetrically to the relatively few findings at the extremes.

Since all the cases used in the control group may be considered satisfactory, it is rather difficult to know how much of this normal distribution to include in our normal range. It is evident we must include many more than those corresponding to the mean or average, but would not be safe in accepting the extremes. One safe method is to take only the center 50 per cent which will include one-half the cases on either side of the mean. This is determined by computing the mean deviation, and accepting only those findings lying within the range, ± 1.

The mean deviation is determined by adding the deviations of all findings from the mean, regardless of sign, and dividing by the total number of findings.

Example: Suppose we take a series of phorias at 40 cm., and record the following readings.

Findings	Deviation
Ortho	6
1x	5
2x	4
3x	3
4x	2
5x	1
6x	0
7x	1
8x	2
9x	3
10x	4
11x	5
12x	6
78	42

Mean = $78 \div 13 = 6$
Mean Dev. = $42 \div 13 = 3.23$
Mean Range = 6 ± 3.23
= 2.77 to 9.23

In this example, any phoria lying within the range 2.77 exo and 9.23 exo inclusive would be within the center 50 per cent of all cases, and could safely be considered normal. Using the figures given, if we include all findings to the nearest whole number, as near point phorias are usually taken, we accept 3, 4, 5, 6, 7, 8, and 9 exo, or 7/13, =53.8 per cent of the total.

Another method which may be used in determining a safe normal range is based on the "standard deviation" instead of the "mean deviation." In this method all deviations from the mean are squared, added together and divided by the number of deviations. The square root of this mean square is now extracted.

It may be used in determining a normal range of findings in the same manner as the mean deviation. While it is considered slightly more accurate, it is very laborious and requires a great deal of time where large numbers of findings are involved. The range figured by this method includes approximately 2/3 of the findings rather than only 50 per cent as in the case of the mean deviation. It is therefore wider and results in a slightly more liberal set of standards.

This does not mean that all cases falling outside of either range are abnormal, either too high or too low. It simply means that they are subject to question as being outside of the known safe range and must be analyzed in relation to all other findings to determine whether or not they are normal for the particular individual considered.

PART II

The first part of our examination is made to determine whether the patient is a psycho-physiological problem requiring visual care; a pathological case requiring medical attention; or a combination of both. We further differentiate between ocular pathology requiring the attention of an ophthalmologist, and secondary ocular manifestations without eye lesions requiring the assistance of the diagnostician or general physician.

The second part of the examination is made to determine the basic refraction of the eye as an optical instrument. We are here interested only in putting the eye in its best condition of focus with a minimum of stress, strain, and expenditure of nervous energy. This information is primarily obtained from our keratometer, static retinoscope, dynamic retinoscope, and subjective verification at 6 M., modified to some extent

by additional information obtained from the duction and accommodative tests.

It is only in recent years that we have gone beyond this point, but we now realize that we have here built only the foundation of our case; so we add a third part, or examination, which is the investigation of the various visual functions, the component parts of the visual reflex, and their various inter-relationships. These tests are taken through the basic prescription just determined and include phorias, and convergence tests both negative and positive, relative and total, at 6 M.; phorias, cross cylinder investigation, convergence and accommodative tests, positive and negative, relative and total, at 40 cm. To these are usually also added an investigation of stereopsis, fusion, and certain other factors. After all this has been done, and not until then, do we come to the analysis of our case, the comparison of our findings with each other and with their normals, and a determination of the detailed handling of the case, culminating in the writing of the prescription for lenses, visual reconditioning, or both.

PART III

Let us now consider each of the tests in detail, noting briefly how they are taken and what they measure; and construct a table of normals for them in the light of recent research. This table of normals is intended merely as a guide for the refractionist in the clinical analysis of refractive cases.

The control group forming the basis of this analysis was taken from the writer's own practice, and consisted of 500 non-pathological, non-presbyopic individuals who were known to have been comfortable and visually effective following refraction with the approximate correction (if any) through which these findings were taken. Absence of presbyopia was determined by the presence of a monocular amplitude of 4.50 D. or over and complete comfort at near point without reading addition.

For each function measured those findings comprising the middle 50 per cent of the group, within the limits of the Mean ± 1 Mean Deviation, or the range including all those lying within one mean deviation on either side of the mean were considered to be safely within normal limits. Where only minimum values were required, the entire range above the Mean less 1 Mean Deviation, or the upper 75 per cent of the group was considered normal.

This does not mean that all other values must be considered abnormal. They should be carefully considered in their relation to all other findings and the case as a whole. All such findings found to be compensated by other functions or explainable in view of other factors involved should be considered as normal for the particular individual under consideration.

Note as we go through the tests, the sequence in which they are taken, as this is important. We have found that a stimulative test, such as the Positive Convergence, will greatly alter a relaxing or inhibitory test, such as the Negative Convergence, taken immediately afterward. Some individuals will relax immediately following such a test; others may show the effect for some time, manifesting false low values in the next ensuing test. Since this factor is difficult to control we should always take our inhibitory tests first, for example, base in before base out, plus lens before minus.

Although the Positive and Negative Relative Accommodative tests are listed together to facilitate comparison following the base-in and base-out tests and are so taken for instructional purposes at the Ohio State University Clinic, the writer prefers a slight variation which he has used for some time.

After adjusting the phoropter for the near point, hold the reduced Snellen card at 25 cm. (10 inches) and ask the patient to read the lowest line he can. If he reads the line corresponding to his distance V. A., he has at least 4.00 D. of accommodation, and the near point ductions may be taken through the subjective correction. If he cannot, and the addition of plus increases acuity, he is a presbyope of less than 4.00 D. amplitude, and the near point tests should be taken through an addition.

For the non-presbyope, take tests in the following sequence: Phoria (No. 13) Fused Cross Cylinder (No. 14B) Induced Phoria (No. 15B) if the add is +1.00 or greater, otherwise through a +1.00 added, Negative Relative Accommodation (No. 21) Negative Relative and Total Convergence (No. 17 A and B) Positive Relative and Total Convergence (No. 16A and B) Positive Relative Accommodation (No. 20) and Total Amplitude of Accommodation (No. 19).

The above sequence conserves time as we add plus from the subjective following the phoria to the cross cylinder reading, then go on to the plus lens blur. We then reduce plus to the subjective, take all

ductions, add minus to the binocular blur, then alternately occlude each eye and continue to add minus to the monocular blur, for the total amplitude. It also more properly follows our requirement of taking relaxing before stimulative tests.

For presbyopes, of less than 4.00 D., the above is modified slightly by taking the minus lens blur (No. 20) immediately following the plus blur (No. 21). Since the amplitude is low the minus will be low, or plus will be required; there will be no serious interference with the ensuing ductions; and we need the information to determine a tentative near point add through which to take them. As the amplitude is low, the monocular and binocular will be about the same, and the monocular can be quickly checked by alternately occluding the eyes and slightly increasing or decreasing the lens power.

The tentative add through which the ductions are taken should normally be +2.50 —Amp. /2.

The near point phoria through the subjective (No. 13B) may be omitted in presbyopes of less than 2.50 D. amplitude as they cannot see the target clearly.

It may be well to note also that the procedure outlined here, and used at Ohio State, eliminates the dissociated cross cylinder and the habitual phorias through the old correction (if worn) at distance and near, and their comparison with the phorias through the new correction. It is all right to take the habitual phorias as a matter of information of the previous condition, but they are worthless as a comparison with the new phorias to determine the effect of the change in lens power.

Research has shown that other factors, including fatigue, the lapse of time, stimulation, and effect of intervening tests, etc., will alter these phorias as well as the change in lens power. Two phorias can only be compared if one is taken immediately following the other with no appreciable time intervening. So taken, they may become a valuable finding in certain cases. The writer takes as routine a second phoria following the near point phoria (No. 13B) through at least a +1.00 added to determine the accommodative convergent ratio, and the effect of added plus on the phoria balance. Ductions should also be retaken through + or —1.00 added as indicated if outside normal limits.

All phorias were taken by the vertical prism dissociation method,

starting from the base-in position and reducing base-in, or going into base-out, until a vertical alignment was reached. This was then repeated and the two findings averaged unless a definite trend was established, in which case findings were repeated until stability was obtained. Increases of exophoria of as much as 8° have been noted at near point in the course of a series of four or five phoria tests before the findings became constant. In such cases it would be better to omit the test entirely than to accept the first reading.

The dissociated cross cylinder finding (No. 14A) was eliminated due to the fact that both the analytical and corrective information available from this finding and comparison with its induced phoria are obtainable with equal facility by a comparison of the relative convergence and accommodative findings. It is of concrete interest when compared with the fused cross cylinder (No. 14B) in getting an idea of the effect on accommodation caused by the difference in convergence, but any convergent deficiency sufficient to cause a significant difference between the two will show up equally well in the convergent and accommodative findings. Correctively, it indicates nothing not clearly indicated by the relative convergence and accommodative findings.

The fused cross cylinder has been retained in the routine, and normals established for it. It is of interest analytically in comparison with the near point phoria in comparing relative lags of accommodation and convergence; and correctively as a measure of accommodation free of association with convergence and the proximity of the target. It includes so many variables, however, among them being pupillary size, depth of focus, errors or changes in the astigmatic correction eliciting various degrees of adaptation and compensation; preference for horizontal or vertical lines. attention, interpretation, and the individual's figure-ground organization, that its corrective value is open to serious question.

An analysis of the 500 cases discloses that in no case was the subjective correction for distance or constant wear, or the near point addition determined by the case analysis, the amplitude of accommodation, and the positive and negative relative accommodative balance altered by the fused cross cylinder finding. In the writer's opinion it is of interest, but can safely be eliminated in a minimum routine.

All findings were taken through the subjective correction with refraction to maximum visual acuity with maximum inhibition to accommodation. Far point target was the smallest line of Snellen letters clearly visible through rotary prisms at 6 M. (through mirror) and

near point the same on reduced Snellen type placed at 40 cm. from the rear surface of the spherical component.

Blur points were taken to the loss of *any* of the letters in the test line rather than to the complete loss of *all* the letters. This criterion has been found to be more consistent and less affected by a tendency to remember and hang on to the last letter visible, especially if it is an "O" and can still be distinguished as a blurred ring long after it is blurred beyond true recognition.

The *Bausch and Lomb* Green Refractor was used throughout. Illumination was 25-foot candles on the distant chart (front illuminated) and 20-foot candles on the near card, with a G. E. lightmeter placed at 10 cm.

The dynamic retinoscopy was done at 40 cm. in conformation with and to facilitate comparison with the other near point tests.

No account was taken of variations in interpupillary distance which would probably have some slight effect on near point phorias and ductions, but variations in prismatic measurements due to the prismatic effect of the prescription lenses through which taken were compensated for in accordance with the following table:[1, 2]

	Lens Power (Average at 180°)				
Correction Factor	Over +5.50	+5.50 to +2.25	+2.00 to —2.00	—2.25 to —6.00	Over —6.00
6 M	1.2	1.1	1.0	.9	.8
40 cm.	1.1	1.0	.9	.8	.7

To use the table, multiply all prism readings by the correction factor indicated to obtain the actual amount of turning of the eye. For example, if you measure the positive fusional convergence at 16 inches as 22 on a myope of —4.00 D., the true convergence is not 22, but 22 × .8 or 17.6, and 10 exo at the near point on the same case would actually not be 10 but 10 × .8 or 8 exo.

In the following paper, Part IV, the writer will present an analysis of findings and determination of normals for all tests used in refractive work.

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REFERENCES

1. H. F. Haines, Optometric Research, Part 1, Prism Findings, *Journal of the American Optometric Association*, December, 1938.
2. Glenn A. Fry, An Experimental Analysis of the Accommodation Convergence Relationship, AMERICAN JOURNAL OF OPTOMETRY, Vol. 14, No. 11, pages 402-414, 1937.

THE EFFECT OF FOGGING LENSES ON ACCOMMODATION*

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Many procedures employed by optometrists are based on the assumption that an eye reacts to a fogging lens by relaxing accommodation. It is supposed, for example, to be better in a subjective test to start with a sphere that fogs the eye and gradually decrease the plus or increase the minus until maximum acuity is obtained, than to do it in the opposite way. Ostensibly the fogging lenses relax accommodation during the period prior to the final measurement of refraction.

The most common method of investigating the effect of a fogging lens is to observe the changes in visual acuity resulting from variations in the power of the fogging lens. Laurance[1] uses the acuities cited in Table 1 as a basis for evaluating the results obtained. Corrected vision is taken to be 6/5. The table shows the effect on acuity produced by adding various amounts of fogging lenses to the subjective correction. If the acuity obtained is better than that indicated in the table it means that the eye undergoes a greater amount of relaxation under the influence of the fogging lens. Laurance points out that pupil size affects the data, and that the values in Table 1 represent those expected for pupil sizes varying between 3 and 5 mm.

No reference is made to the experimental data which forms the basis for Table 1.

TABLE 1

Visual Acuities Associated with Various Degrees of Myopia

Myopia	2.5 D.	2.0 D.	1.5 D.	1. D.
Acuity	20/200	20/100	20/80	20/60
Myopia	.75 D.	.50 D.	.25 D.	0.00 D.
Acuity	20/40	20/30	20/20	20/17

*Submitted for publication July 16, 1940.

A simple method of obtaining data to form a basis for a table such as Table 1 is to paralyze the ciliary muscle with atropine and obtain measures of acuity with various plus or minus spheres combined with the cylindrical correction for astigmatism. For this purpose the right eye of the junior author was atropinized. Two drops of atropine were instilled one afternoon at an interval of 15 minutes and a third drop the following morning. By the afternoon, when the tests were made, complete paralysis of accommodation had taken place as determined by an instrument devised by Fry,[2] which is capable of measuring changes in accommodation of .05 diopters. The visual acuity data were obtained with the Clayson Acuity Meter using a 4 mm. artificial pupil. Four measurements were made with each spherical lens and averages were computed. These averages are plotted on the graph in Fig. 1 by the circles. On the same graph are plotted the data given in Laurance's Table. It can readily be seen that the values for the atropinized eye are somewhat better than those given by Laurance. This indicates that the subjects used by Laurance permitted more and more accommodation to come into play as the power of the fogging lens was increased.

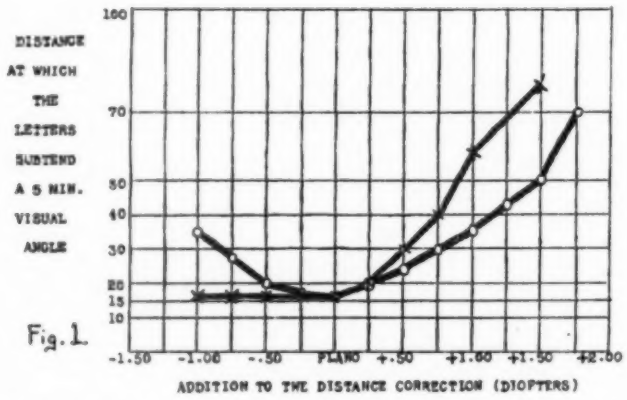

Fig. 1. The effect of fogging lenses on visual acuity. The circles represent data obtained through a 4 mm. artificial pupil with an atropinized eye. The crosses represent the data given by Laurance as a standard for comparison in cases of suspected hypertonicity of accommodation.

In the present investigation the writers have devised a more direct method of measuring the state of accommodation when the eye is under the influence of a fogging lens.

The apparatus which has been used (Fig. 2) makes it possible to

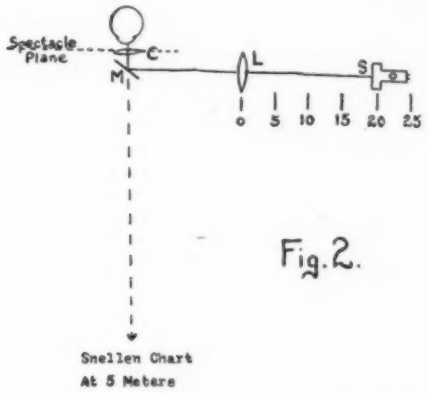

Fig. 2. Diagram of the modified badal optometer used for locating the conjugate focus of the retina while the eye is looking at a distant target through lenses of various powers.

determine the amount of accommodation in play when the eye is looking at a distant target through lenses of various powers. One eye at a time is used.

In the experiment a test object consisting of a Snellen chart placed at a distance of 5 meters from the spectacle plane was seen by the subject through a half-silvered mirror (M) mounted to an optical bench. A vertical slit (S) illuminated by a 7½ watt electric lamp, enclosed in a cylinder, was also mounted on the optical bench so that the subject could see it reflected by the mirror. The image of the slit is seen superimposed on the Snellen chart. The width of the slit was adjustable and the intensity of the light was controlled by a variac. Between the slit and mirror, and 20 centimeters from the spectacle plane, was mounted a +5.00 D. spherical lens. The spectacle plane was chosen as one lying 14 mm. in front of the cornea and the head was adjusted so that this plane coincides with the vertex of the lens in the back cell. The distance of the slit from the lens could be varied by the subject with a rack and pinion arrangement which caused the slit to slide back and forth on the optical bench. Between the mirror and the subject's eye, three cells were mounted to hold lenses making up the subject's distance correction (C) and an artificial pupil of 3 mm. diameter. The position of the subject's head was kept constant by a chin and forehead rest thereby keeping his eye centered with the entire optical system.

It should be noted that the lens and slit constitute a Badal optometer. Consequently the image formed on the retina will be the

same size no matter where the slit is placed in front of the lens. Furthermore, each change of one centimeter in the distance of the slit from the lens corresponds to .25 diopter change in the stimulus to accommodation.

After one eye of the subject had been occluded and the head adjusted so that the other eye was properly centered, sufficient plus sphere (+2.00 D.) was added to the subject's distance correction to blur the 200 foot letter on the Snellen chart at 5 meters. During the entire experiment the subject was cautioned to watch the smallest line readable and while fixing this line the slit was used to determine the point for which the eye was accommodated.

The principle underlying this determination consists in using a slit so narrow and of such feeble intensity that it becomes invisible when it is placed in front of or behind the plane for which the eye is accommodated. Owing to the depth of focus of the eye, the range of visibility cannot be reduced to less than 2 to 4 cm. but it can be assumed that the mid-point of this range represents the point for which the eye is accommodated.

Measurements were made to determine the limits on both sides of the visible range; one was made by starting from a point close to the

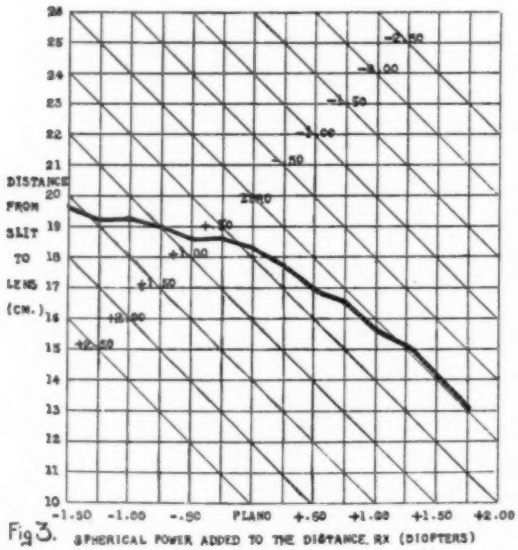

Fig. 3. Badal optometer data for the left eye of subject J. G. illustrating relaxation of accommodation under the presence of fogging lenses.

5.00 D. lens and moving the slit away from the lens until it became visible, and the other was made by starting from a point on the far side of the visible range. Four readings were taken for each limit of the range and the average distance of the slit from the lens was computed. This procedure was repeated with various spherical additions to the distance correction, starting with the +2.00 D. addition and going in steps of .25 D. to a —1.50 D. addition. The averages for the various additions were plotted to form a curve as shown in Figs. 3, 4 and 5. The visual acuity values obtained through the various lenses can be recorded and plotted as shown in Fig. 6. The subject was given credit for the smallest line in which one-half or more of the letters could be read correctly.

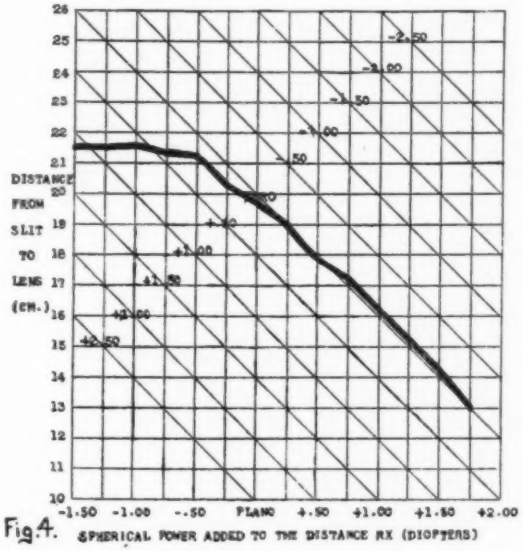

Fig. 4. Badal optometer data for the left eye of subject J. M. illustrating no change in accommodation under the presence of fogging lenses.

Attention should be called to the construction of the graphs used for plotting the data obtained with the Badal optometer. The diagonal lines indicate the amount of accommodation in play. The scale values assigned to these lines are based upon the assumption that zero accommodation is in play when the subject is focused for an infinitely distant object when looking through his correction. When the slit is 20 cm. from the 5.00 D. lens, the rays from each part of the slit are parallel after passing through the lens and hence the slit in this position corresponds to an infinitely distant object. When the slit is 19.2 cm.

from the lens, the image formed by the lens and mirror coincides with the Snellen chart. Since focus for a distant object through the distance correction does not necessarily represent the absolute but an arbitrary zero level of accommodation, it is to be expected that some of the values for accommodation will fall below the zero level.

Twelve subjects were investigated and three types of curves were found. In the first type, of which only one instance was found, the subject relaxes more and more accommodation as the fog is increased. In the second type, which is the most prevalent, the subject maintains the same level of accommodation for different amounts of fog. In the third type the subject reacts to an increase in fog by permitting more accommodation to come into play.

Figs. 3 and 6 illustrate the first type. When +0.75 sphere is added to the distance correction, the eye cannot focus for the target and reduced visual acuity results (Fig. 6). When the plus addition is increased beyond this point, an additional quantity of accomodation is relaxed and with a +1.25 addition, .25 diopter less accommodation is in play than with the +.50 addition. This represents the maximum relaxation of accommodation with fogging lenses because there is no further relaxation with an increase of the plus addition.

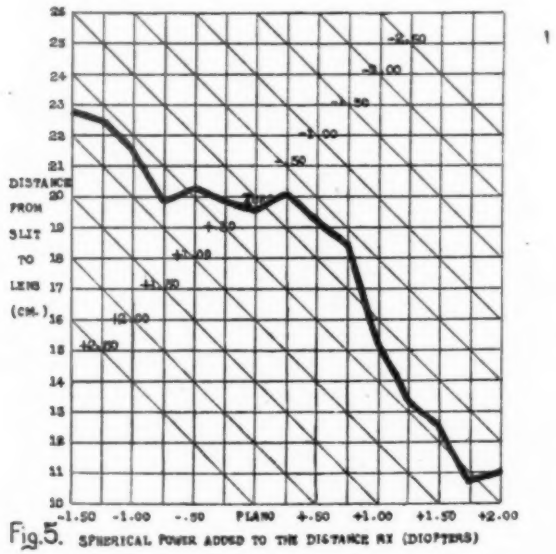

Fig. 5. Badal optometer data for the right eye of subject S. E. illustrating an increase in accommodation under the presence of fogging lenses.

As the plus lens addition is reduced from +1.75 in steps of .25 diopters, the midpoint of the visible range recedes from the lens and the acuity increases. Maximum acuity is first obtained when the midpoint falls 17 cm. from the lens. The clearest image of the Snellen chart should be obtained when the midpoint of the visible range of the slit falls at 19.2 cm. for under these conditions the optical image of the slit formed by the lens and mirror coincides with the Snellen chart. Due to the depth of focus of the eye, just as high acuity is obtained when the slit is 2.2 cm. in front of the 19.2 position. This corresponds to .55 diopters. Since maximum acuity is first obtained with a +.50 addition to the distance correction, this indicates that the subject is under corrected to this extent.

Inspection of Fig. 4 shows that this subject maintains the same amount of accommodation with plus lenses ranging from +1.75 to +.25; that is to say, further increase of plus power beyond +.25 does not force more relaxation. Reduction of the plus power to zero brings accommodation into play, and increases in minus from this point on increases accommodation. This type of curve was found in a large number of the subjects.

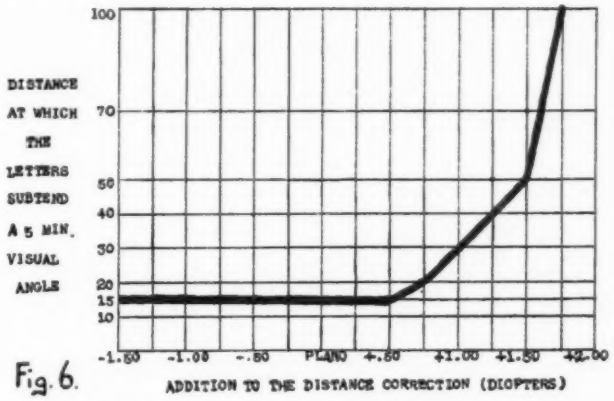

Fig. 6. Visual acuity data for the left eye of subject J. G.

The subject whose data is illustrated by Fig. 5 reacts in a much different manner than the two types described above. Maximum relaxation is obtained with plus lens additions ranging from +.25 to +.75. When the plus addition is increased beyond this range, accommodation is permitted to come into play in spite of the fact that this increases the amount of blur. At the zero point accommodation again comes into play and increases as the minus addition increases.

Summary

A method has been devised for measuring directly the effect of a fogging lens on accommodation. The relation of this method to that based on visual acuity has been discussed. The results show that an eye may react to an increase in fog either by forcing a greater degree of relaxation or by permitting more accommodation to come into play, but as a general rule it remains passive.

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REFERENCES

1. L. Laurance, Visual Optics and Sight Testing, pages 142 and 143 (1936).
2. G. A. Fry, An Experimental Analysis of the Accommodative-Convergence Relation, *Trans. Am. Acad. of Opt.*, Vol. 11, pages 64-76 (1937).

AXIAL MYOPIA AND ITS RELATION TO HYPERTENSION*

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At the outset it may be stated that axial myopia does not appear to be associated with ocular hypertension. While this is an unusual way to begin a technical paper on such a widely discussed subject, it is the writer's contention that such a conclusion is justified because of the data to be presented. Ocular hypertension is apt to cause ruptures in either Descemet's or Bowman's membrane, or both. This is primarily apt to occur in *young people.*[1] Lacerations or tears in *Bowman's* membrane occur *rarely* in ocular hypertension. According to Duke-Elder,[1] tears are typical in cases of buphthalmos, conical cornea and occasionally in myopia. In the latter condition (myopia) the tears or fissures are present only in *cases of hypertension.*

The probable reason why the tears are more apt to occur in Descemet's membrane is because it may be less elastic than Bowman's membrane. These tears may occur especially in *young eyes* because the sclera and cornea both undergo considerable stretching and enlargement. This is well demonstrated in buphthalmos[4, 5, 6, 7] where Gradle[4] has shown that the intraocular tension varies from 40 to 90 mm. As the cornea is stretched, tears will occur in those corneal lamellae that are the least elastic, namely, Descemet's membrane.

According to Koster and Ridley,[25] distensibility of the sclera varies with the pressure, and they also note that the sclera is subject to marked stretching. According to Gradle,[4] in the advanced stages of buphthalmos where the eyeball ruptures, it is always the sclera that gives way. The sclera becomes thicker and more rigid as age advances.[2, 3] Hence ruptures in either Descemet's or Bowman's membrane do not occur in glaucoma because this affliction occurs at about 40 years or beyond, and the ocular hypertension therefore cannot cause distension of the sclera or cornea.

*Submitted for publication August 23, 1940.

In conical cornea there is merely a distension of the cornea due to some impairment of its structure. It is this distension that causes a rupture of the laminae that manifest the least elasticity.

Buphthalmos, also known as infantile glaucoma, in about one-third of the cases, occurs shortly before birth or during the first year of life; the remaining two-thirds usually appear before the tenth year.[4] According to Gradle,[4] myopia predominates in buphthalmos. According to Graves,[5] the resulting myopia is not extreme. According to Wolff,[6] the eyeball distends *all over* leading to general enlargement. Concurrently opacities in the cornea appear, due to ruptures in Descemet's membrane, the cornea is globular and flattened, the lens is flattened and displaced backward, *and the myopia is less than might be expected.* According to Duke-Elder,[7] the refraction of the eye, contrary to what may be expected, *is not necessarily myopic.* While high degrees of myopia (15 to 16 diopters) may be found, *hyperopia is relatively frequent.*

Gradle,[4] Graves,[5] Wolff,[6] and Duke-Elder,[7] all reveal the occurrence of ruptures in Descemet's membrane, corneal stippling and opacities in enlargement of the eye due to hypertension. *If myopia were due to increased tension it seems very likely that it would present the above picture.* According to Gradle,[4] the intraocular pressure in buphthalmos varies between 40 and 90 mm. The daily variations in pressure are the same as in the normal or glaucomatous eye, with the highest point attained in the early morning hours. According to Wolff,[6] the tension in buphthalmos is increased but often difficult to detect clinically. This would appear to indicate that the tension is markedly increased during the night. Since sleeping in an illuminated room has proved its value in my own cases, it seems very likely that sleeping under a lighted lamp (or the avoidance of darkness) may prove to be of value in helping to arrest the progress of buphthalmos.

In myopia, there is no glaucomatous cupping of the disc. In glaucoma there is no posterior staphyloma such as the characteristic myopic crescent. According to Wolff,[8] staphylomata in glaucomatous eyes are equatorial, intercalary (limited to the narrow zone corresponding to the angle of the anterior chamber), and ciliary (occupying the zone corresponding to the ciliary body). Wolff[9] also shows that the equatorial staphylomata occur most usually where the sclera is most weakened by the exit of the vortex veins and where the sclera is unsupported by muscles. *Such staphylomata are not observed in myopic eyes.* Glaucoma-

tous staphylomata also occur in those weakened atrophic areas that formerly contained nodules, such as are found in nodular scleritis.[11-14] (It was shown in a previous paper[11] that nodular scleritis does not appear to be a disease per se, but merely a symptom of primary glaucoma.) Duke-Elder further states[13] that a scleral staphyloma is usually a progressive lesion, the eyeball sometimes attaining enormous dimensions, *being also accompanied by pain and associated with increased tension. This point seems to show that myopia cannot be due to hypertension because no pain, which is especially evident during the night, accompanies the occurrence of myopia even in the progressive type.*[10, 15] Myopic staphylomata are always *posterior*, whereas glaucomatous staphylomata never extend posterior to the equator.

Since myopia increases up to a certain age, there are many who believe that close work is a cause of the increase in myopia as age advances, ascribing accommodation or contraction of the extra-ocular muscles as the cause. Enlarged photomicrographs of monkeys' eyes fixed after instillations of eserine and atropine show that the vitreous is pressed forward against the periphery of the lens, the zonule and ciliary body under eserine; while an open space exists between these structures in atropinized eyes.[16]

However, actual practice reveals that accommodation does not appear to cause increased tension, for it was shown that the intraocular tension is highest in the early morning hours[17] or during the night,[18] and *lowest in the late afternoon.* Adler has shown that use of the eyes in glaucoma does not cause the tension to increase,[19] and statistics show that age or the refractive condition have no effect on intraocular pressure.[17] If accommodation caused increased tension, then presbyopes and myopes would have less tension than hyperopes and emmetropes of younger years. Furthermore, Luedde has shown that increased intraocular tension is not observed during accommodation because there is merely a rearrangement, and not an increase of the intraocular contents.[16] According to Gronholm,[20] contraction of the ciliary muscle in the experimental animal by stimulation of the third nerve causes no change in intraocular pressure.

While a tenotomy of the recti lowers the pressure (Schonberg, 1913; Salvati, 1924),[21] and the fact that pressure of the eye falls to almost half of its original height when the recti are paralyzed by curare,[21] and stimulation of the recti to contraction by acetyl-choline

causes increased pressure, we must consider that medical or surgical interference of the recti is not a physiological condition. The recti and obliques therefore cannot be considered as causating factors of increased tension because, as was mentioned previously, the pressure in the normal or glaucomatous eye is the highest in the early morning hours,[17] or during the night,[18] and lowest in the late afternoon. It will be repeated that Adler has shown that use of the eyes in glaucoma does not cause the tension to increase.[19]

Gradle's dark room test[22] indicates in a most emphatic way that the marked increased tension caused in glaucomatous eyes after being kept in the dark one hour cannot be due to tension exerted by the extra-ocular muscles, because upon exposure to strong light, the intra-ocular pressure in those submitted to the test *dropped suddenly to the previous level. It is interesting to note that sudden exposure to strong light after being in the dark for one hour will cause a very marked spasm of the orbicularis palpebrum and the extra-ocular muscles!*

It is worthy of note to mention here that the size of the pupil does not seem to have any effect on the intraocular pressure because Feigenbaum (1928-29), Bruckner (1922), Puscariu, Cherchez, and Nitzulescu (1925) have found that dark adaptation causes a rise in pressure in cases of aniridia, after an iridectomy, with atropine or pilocarpine, and occurs in blind as well as seeing eyes.[26]

There should be no cause of alarm when myopia increases in early life. It appears to be a mere natural sequence of events. According to Weiss,[23, 24] the eyeball grows most rapidly during the first years of life, the vertical diameter growing faster so that the eye becomes more nearly spherical. The rate then decreases until puberty, when growth again becomes more rapid until the early twenties. From birth to adult life the eyeball grows 3.25 times. The increase in size during the first years of life affects mainly the anterior segment, that is the cornea and sclera up to the insertions of the recti. The later growth affects mainly the posterior segment, *but the distance between the fovea and optic nerve remains the same as at birth.*

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BIBLIOGRAPHY

1. Duke-Elder. Textbook of Ophthalmology, Vol. II, pages 1867-1869. C. V. Mosby Co.

2. Wolff, Anatomy of the Eye and Orbit, page 253. Blakiston.
3. Berens, Eye and Its Diseases, page 729. Saunders
4. Ibid, pages 729-730.
5. Ibid, page 463.
6. Wolff, Pathology of the Eye, page 142. Blakiston.
7. Duke-Elder, Textbook of Ophthalmology, Vol. II, page 1294. Mosby.
8. Wolff, Pathology of the Eye, page 141. Blakiston.
9. Ibid, page 144.
10. Duke-Elder, Textbook of Ophthalmology, Vol. II, pages 2051-2052. Mosby.
11. Saks, Scleritis, Its Mechanism and Interpretation, *American Journal of Optometry*, July, 1940.
12. Berens, Eye and Its Diseases, page 560. Saunders.
13. Duke-Elder, Textbook of Ophthalmology, Vol. II, pages 2046-2047. Mosby.
14. Ibid, page 2055.
15. Berens, Eye and Its Diseases, page 558. Saunders.
16. Ibid, page 137.
17. Duke-Elder, Textbook of Ophthalmology, Vol. I, page 493. Mosby.
18. Berens, Eye and Its Diseases, page 1167. Saunders.
19. Adler, Clinical Physiology of the Eye, page 381. MacMillan.
20. Ibid, page 380.
21. Duke-Elder, Textbook of Ophthalmology, Vol. I, page 499. Mosby.
22. Berens, Eye and Its Diseases, page 720. Saunders.
23. Wolff, Anatomy of the Eye and Orbit, page 252. Blakiston.
24. Salzmann, Anatomy and Histology of the Human Eye Ball, page 207. University of Chicago Press.
25. Adler, Clinical Physiology of the Eye, page 366. MacMillan.
26. Duke-Elder, Textbook of Ophthalmology, Vol. I, page 418, 419, 519, 520. Mosby.

Current Comments by Carel C. Koch

A Monthly Department

in which the Editor of the AMERICAN JOURNAL OF OPTOMETRY & ARCHIVES OF THE AMERICAN ACADEMY OF OPTOMETRY will discuss items of news of general interest; such as relate to new instruments, clinical techniques, education, public health, and optometric legislative and organization problems.

THE AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF THE AMERICAN ACADEMY OF OPTOMETRY

For the past 12 years, the AMERICAN JOURNAL OF OPTOMETRY has served the American Academy of Optometry in (1) the publishing of the annual bound TRANSACTIONS OF THE ACADEMY and (2) in giving the technical papers presented at the annual meetings of this scientific optometric organization, wide distribution among all optometrists through the various departments of this journal.

To further augment the excellent relations which exist between the Academy and this technical publication the AMERICAN JOURNAL OF OPTOMETRY with this issue becomes the monthly organ of the Academy, adopting the new publication name, the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF THE AMERICAN ACADEMY OF OPTOMETRY.. The new name embodies the old as well as the new, and we hope that the journals to come, will also embody all that is good of the old American Journal as well as the best of the Academy, as it has functioned, and as it is functioning today.

The editorial policies remain the same as they have since this publication was started in 1924. This is primarily a technical publication and will continue to remain one. The editorial management will remain the same with the writer serving as editor assisted by Dr. G. L. DuPlessis and Dr. Clarence W. Morris as associate editors and department heads. To further strengthen this publication, an editorial advisory council composed of Drs. D. R. Paine, R. M. Hall, O. J. Melvin, E. E. Hotaling, A. P. Wheelock, E. LeRoy Ryer, D. G. Hummel, G. A. Fry, Charles Sheard, Brant Clark, R. J. Beitel, Jr., F. K. Moss, Howard C. Doane, Wm. Feinbloom, J. Neumueller, G. O. Ohlsson, C. E. Jaeckle, E. Petry, F. J. Andreae, and Marguerite Thoma has been appointed who will

actively take part in the writing and editorial advisory work of getting out this publication each month.

Every reader of this publication should benefit as the result of this new development in the life of this magazine. The active support of many of the best minds in the profession will further strengthen this journal and do much to assure all readers that the technical occular and refractive material presented in the various departments of this magazine will be at all times, as authentic as it is possible to make them each issue.

To the members of the American Academy of Optometry, this new development will also, we believe, prove of value as the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF THE AMERICAN ACADEMY OF OPTOMETRY will serve this scientific optometry society as a month to month medium of expression among the officers and members.

At the beginning of a new year we look forward with keen anticipation to a year of useful service to the profession of optometry. With the splendid spirit of cooperation already shown, we have every reason to believe that the year 1941 will see the AMERICAN JOURNAL AND ARCHIVES OF OPTOMETRY reaching new heights in assisting in the technical development of ocular refraction through the excellent work of all optometrists.

PROPOSAL FOR AN OPTOMETRIC CIVIC CENTER IN GREATER NEW YORK CITY

The suggestion is made[1] that the optometrists of greater New York City, numbering in excess of 600 men, establish an optometric headquarters in that metropolitan center. It is proposed that as an organized group these optometrists purchase or build a suitable optometric civic center devoted exclusively to the functions of a metropolitan professional society. The proposed building would house an assembly hall for lectures and meetings. It would also have conference rooms, a library, organization offices for the secretary and officers of the society, an optometric eye clinic coupled with a public health center, an office for social service case workers as well as a headquarters for an optometric public relations counselor for greater New York.

The plan is an ambitious one and indicates that the officers of

[1] Editorial. Bulletin of the Optometrical Society of the City of New York. Vol. 6, No. 2, pp. 5-6. 1940.

the Optometrical Society of the City of New York have vision and are capable of purposeful leadership. This proposal is one which will require much unified activity and careful planning. It is also a plan which would prove very helpful to optometry if carried forward to conclusion. The benefits which would accrue to the optometrists of New York City are many in the consummation of this plan, as a civic center of this kind would do much towards stimulating progress in both the economic and technical phases of optometry. It would give much added prestige to our profession and would serve as a rallying point for optometric forces as these are needed.

Just as most professional societies need an organization headquarters to assist in charting the general progress of the profession in these difficult times, so too, do the optometrists of greater New York City need a center for clearance of refractive and ocular problems in the largest city of the American continent. It is hoped that these plans, which are as yet primitive, will be developed, adopted and carried into effect by this active society. It is a proposal which should be carried forward with the usual vigor which typifies New York enterprises.

FIFTY YEARS OF PUBLISHING THE OPTICAL JOURNAL AND REVIEW OF OPTOMETRY

In January 1941, the OPTICAL JOURNAL AND REVIEW OF OPTOMETRY celebrates its 50th anniversary. Originally organized as the OPTICAL JOURNAL in 1891, this publication has, during a 50 year period, covered the field of the refractionist and dispenser, as well as that of the manufacturer and distributor of optical products.

This month a special issue of this publication, commemorating its 50th anniversary has been issued. Among other things, this special souvenir issue deals with the development and history of ophthalmic lenses, frames, instruments, equipment, machinery, tools, spectacle cases, protection glasses, office furniture, artificial eyes, and optical repairs of interest to optometrists and also hearing aids.

To the Chilton Company, Inc., of Philadelphia, who publish the OPTICAL JOURNAL AND REVIEW OF OPTOMETRY, and to Mr. Maurice E. Cox, the editor of this technical and trade publication, the AMERICAN JOURNAL AND ARCHIVES OF OPTOMETRY offer them our most sincere congratulations on having reached their fiftieth birthday.

SPONSORSHIP FOR OCULAR PUBLIC HEALTH PROJECTS

Several significant statements were made by the optometrist Feinbloom in the report of the Public Health Bureau,[1] presented before the A.O.A. Congress at Cincinnati. Of these, probably the most important to organized local groups of optometrists was that portion of his report which dealt with public health projects as set up in local communities. Here Feinbloom points out that in doing ocular public health work, such as school visual surveys, motor vision surveys or in the conduct of free eye clinics for the under-privileged, it is of the greatest importance for the future success of these activities, that these individual projects be sponsored by some civic group other than the local optometric society itself. He advises that optometrists be connected with the project, not as the operating heads of the activity, but rather in their professional capacities as refractionists. The civic body, either a local service club, a P.T.A. group or the Red Cross Society being enlisted to manage the activity itself and to secure the needed cooperation of other civic associations and of the local authorities.

AN APOLOGY

Due to unusual pressure for space, in the January issue of the AMERICAN JOURNAL AND ARCHIVES OF OPTOMETRY, the excellent Report of the Optometric Public Health Bureau of New Jersey, written by the optometrist Ridgeway, is being held over until our February, 1941 issue, where it will appear as a Special Report.

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[1] William Feinbloom. One Year of Public Health Optometry. Journal of the American Optometric Association. Vol. 12, No. 4, pp. 113-117. 1940.

SPECIAL REPORTS

ANNUAL ADDRESS OF THE PRESIDENT*

Don Rodney Paine, Opt.D., F.A.A.O.
Topeka, Kansas

Fellow Members of the Academy, Officers, and Guests:

Many of my predecessors in the office to which you have elevated me, have expounded the interesting history of our Academy far more eloquently and factually than can your present Chairman. Let us, therefore, forego in this address any treatment of the Academy's yesterdays in the interest of discussing some modernization of the Academy's policies of today.

In order that such a society may justify its existence and exert a constructive influence on its own membership, and the entire profession of which it is a part, there are definite standards which this fraternity must establish and maintain, and certain contributions for the betterment of its parent profession which it must make.

In order, therefore, to keep in tune with the ever changing conditions and to more fully and successfully fulfill its destiny the Academy has recently revised its policies. Yet such steps are merely those on the first rungs of a ladder which can be made to reach unfolding heights.

It is concerning these revised policies along with recommendations for further amplification of policy that this annual address will treat.

Let us then consider, first, the reasons for, and nature of, such revisions of policy, and second, recommendations for a broader service.

The first portion will be limited to a brief appraisal of only those major revisions as were decreed, effective January 1, 1940, as follows:

First: That a Board of Regents was established with its members geographically located to points of advantage throughout the states. The duties of each member of this Board is to keep in active touch with all Fellows in his respective zone, to contact all applicants personally or through correspondence, and to act as a committee on enforcement of standards by reporting any infractions of the Fellowship Pledge. The

*Presented before the American Academy of Optometry, Chicago, Ill., December 8, 1940.

ultimate value would be invalidated of the Academy's strict entrance requirements without equally strict vigilance of the maintenance of such standards.

Second: That as part of the entrance requirements a Board of Examiners is established before which candidates for Fellowship must prove their competency as optometric practitioners. Further, the privilege is also granted to established members of taking this qualifying examination with the reward of an honorary certificate. Little need be said in support of this important revision of policy except that the establishment of this Board of Examiners marks the most important and vital step in Academy history directed toward quality membership with its greater talents, its more worthwhile Fellowship and its more edifying objectives.

Third: That a MANUAL OF INSTRUCTION was published for those eligibles in practice who are desirous of qualifying for Fellowship. Since this creation is one in which the Board is duly proud and to give credit where credit is due, a few explanatory remarks concerning the Manual are in order.

Realizing the vital need for such a study guide, your Chairman sought collaboration with Dr. Marguerite Thoma, whose direction of qualifying tests in Wisconsin has won her national recognition, Dr. O. J. Melvin, Dr. Wm. B. Needles, and Dr. Irvin Borish, whose generous assistance aided your Chairman in the compilation of an Outline of Clinical Examination with an auxiliary list of references. These were merely the first steps. By far the greatest credit belongs to Dr. R. M. Hall, in whose hands this initial work was placed. With this material as a nucleus, Dr. Hall, with much elaboration, compiled, arranged and edited this creation of which the Academy can well point with pride.

Time will not permit a discussion of the many minor revisions of policy, which revisions have on previous occasions been brought to your attention. It is of less importance to boast of those things which have already been accomplished than it is to set forth for consideration those things which need to be accomplished.

Now as to the second portion: namely, recommendations for further extension of policy. This will require a few prefatory remarks.

If this Society were dedicated alone to the bringing together of a few kindred souls selected on the basis of competency in practice and

professionalism and ethics in the conduct of such practice for the exclusive purpose of round table discussions and a publication of such proceedings, this fraternity would indeed continue to circumscribe its size and scope of achievements within very narrow limits. While due respect is tendered those who are content with such limited activities, I unalterably join the opinion of those who do not approve of that stalemate policy of laissez faire.

Marden has said, "The faculty to dream and plan was not given to mock us. There is a reality back of it." "A man will remain a rag picker as long as he has only the vision of a rag picker." It is likewise true that the great force which is continually prodding aspiring men to achieve can be harnessed to greater accomplishment if backed by organized vision and determined organized action.

Therefore, we have one of two trails to follow, the first of which leads to the swamps of inactivity and complacency with inevitable disintegration, and the other to the hilltops of accomplishment and progress. It is concerning the latter, that is the reward which follows honest and intelligent endeavor which I want to treat.

The following proposals are merely goals toward which we can aim, step at a time, as size of membership, quality of leadership and funds and the will and purpose to do will permit. Common sense warns us that we cannot make the entire hurdle all at once. However, it is crucially necessary that we must build on top of this foundation of quality membership personnel, which the recent revisions have made secure, a superstructure of accomplishment and service first to our members and second to our parent profession and our public.

Many of these things of which I treat, along with still broader accomplishments, are in the record of the American Academy of Ophthalmology. To give an idea of the magnitude of growth of this medical fraternity, this year 110 courses, 110 instructors totaling 290 hours of classwork were offered at the annual meeting in Cleveland. This society is giving eighteen different extension courses of instruction to its members throughout the country. Home study courses have been authorized in the endeavor to aid a large number of men to prepare more adequately for the various specialties. Why should I devote this brief paragraph to the American Academy of Ophthalmology accomplishment? The answer is to point out that the growth of this fraternity and the distinction it affords its members is the result of its widespread service to its Fellow-

ship and in turn to its parent organization, medicine. Likewise if our Academy amplifies its usefulness within sane and sensible limits commensurate with its size, the nature of its highly specialized service and its ability, it too can grow in proportion to the scope of such service.

Let us consider some of these objectives to which the Academy should directly or indirectly lend its influence.

(1) During this crucial period in the world's history when the entire world is a military camp, it should be the objective of a designated department of the Academy to establish a standardized visual examination—one acceptable to the Government—to be used in analyzing the visual fitness of commercial and military aviators, as well as those College and University candidates who are investigated for pilots training.

Just as the Ophthalmological Academy is the leader in its ranks of training men for these various specialties, our Academy should make available to every member a standardized visual test for aviators which will make possible the preparation of all Fellows of the Academy to offer this service and thus let it be known to interested authorities in due time that the Academy personnel is so equipped and ready to serve.

(2) Toward the same end of assisting in this National Defense Movement and the conservation of man power in defense industry the Academy should assist in establishing a specifically standardized visual examination for the industrial workers. By this and many other ways the Academy should extend its influence to the National Safety Council.

(3) The Academy of Ophthalmology has led the medical group for years in the campaign of prevention of blindness. Do not forget that functional eye care is closely affiliated with this movement and, therefore, the Academy should delineate the extent of its service of functional eye care which will assist in this program for the prevention of the blind.

(4) The Academy of Optometry should, through a delegated section, study ways and means of cooperation with the educators in setting up screening tests for the schools and in every possible manner assist the educators with the ever expanding visual retardation of the school population. In spite of all that has been attempted this is one of the most important yet most tragically neglected fields. The higher educators, who are investigators in the field of reading, are pleading for assistance.

(5) Academy talent and some facilities are available which would lend themselves to a standardized method of rehabilitating the sub-

normal visual population and the scientific application of contact lenses. These facilities should be brought under Academy standardization and approval rather than assuming the risk of these devices being promiscuously used by pseudo or undertaught technicians whose exploitation of this important field of specialization results in charges of charlatanry against the exploiters and the profession under whose banners they fly.

(6) The present round table discussion program should eventually evolve into large instructional programs with group teaching as has previously been advocated.

(7) As larger membership with its additional talent and increased income is realized, more funds and effort should and will be directed toward controlled research.

(8) Further consideration of the feasibility of the Academy furnishing its members periodically educational material in addition to, or in lieu of, the annual TRANSACTIONS OF THE ACADEMY.

(9) Local Academy chapters should become more widespread throughout the Nation. Toward this end machinery has been put in motion by soliciting the aid of the members of the Board of Regents to do all they can to have established in their respective domain a local Academy Chapter.

The intent is to have the local chapters form study groups and have as one of their basic study guides the Academy's MANUAL OF INSTRUCTION. Thus these groups all over the nation can carry on planned preparation for examination entrance requirements. From this source, if the plan is properly pursued there should issue a constant stream of candidates adequately prepared to undergo the Academy entrance examination. Regional examination should be offered when the demand is sufficiently large to warrant such machinery.

A special committee should be assigned to the undertaking of promoting and assisting in the establishment of local chapters.

(10) The consideration of establishing a sectional congress and regional examinations to be held in the West simultaneously with the annual meeting in the East to facilitate attendance of meetings and growth of membership throughout the West Coast States, and all states West of the Rockies. This would prevent Academy provincialism in the interest of nationwide Academy participation; it should result in greater combined attendance; it would provide increased editorial material for

Academy publications; it could result in expanded annual programs through the interchange of papers so that each group could profit by the combined programs.

(11) Each Academy member should become interested and the entire Fraternity as a unit should, in every possible manner, within its jurisdiction, lend support to these vital movements by giving wise and understanding counsel, by attending all Academy meetings, by aiding in the establishment of local chapters and by occasionally instructing and encouraging the members of the local chapters. Let Academy influence be felt. We can make of the American Academy of Optometry an institution of much worth and influence if like the Academy of Ophthalmology we are willing to pay the price. The Academy of Ophthalmology has properly boasted, "that for very long years her members have led in the campaigns of many of these issues and through many discouragements and by arduous work great results have been obtained and the citizenry of this country has benefitted thereby."

It does not fall within our Academy's jurisdiction to in any measure control or dictate with regard to some of the proposals herewith set forth. It is, however, within the domain of authority and should be considered the duty, in the interest of a broader service to its membership, for the Academy to establish standard techniques and procedures for such as will be approved of these recommended specialized examinations and to teach by means of bulletins and at annual sessions such procedure to its membership. Separate Committees should be set up to formulate the activities of each respective accepted plan. These expansion activities should be and must be indulged in by the many rather than the few lest we limit such expansion. These must not be idle words; we must not allow our ambitions to be merely an "imflammation of the Academy's wishbone."

Dare anyone say that our united membership should not and cannot grow to encompass these things? Dare anyone voice the sentiment that the Academy should smugly remain aloof from such proffered services and confine its influence and support to a limited educational program and a controlled research program which is not sufficiently extensive to represent the ideals of the Fraternity? I trust that I am voicing your sentiments when I say no, for precedent has shown how easy it is to stagnate within the shell. We must ever enlarge our usefulness and

service. Time is set aside to discuss these vital issues during a business session.

Before concluding, I want to express gratitude in behalf of our Fraterntiy to the members of the various committees for their generous support. Dr. Glenn Fry should be accorded due recognition as Chairman of Committee on Nomenclature for his research activities on this arduous and perplexing problem. While there has been a temporary suspension of this activity during the past year the work is to be resumed shortly.

We are deeply indebted to Dr. Laurence Folsom for his untiring efforts in serving as program chairman. Just before completing this banner program Dr. Folsom became ill. Your Chairman feels sure that he is voicing the sentiments of the entire Fellowship in extending to Dr. Folsom gratitude mingled with deep sympathy because of his sickness. We owe much thanks to other members of the program committee, Dr. D. G. Hummel and Dr. Robert Beitel, Jr., who completed program arrangements.

It is impossible to do justice in acknowledging the unstinted and unselfish service which Dr. Fred Andreae has devoted to Academy affairs which far transcends the duties of his office. Your Chairman owes much to Dr. Andreae's cooperation and to the generous, wise, and untiring assistance of Dr. R. M. Hall.

I want to thank each member of the Council and each member of the Board of Regents for their cooperation.

In thus establishing for the first time in the Academy's history a Board of Examiners, I take great pride in extending in behalf of our Fraternity deep appreciation to the following active members of the Board; Dr. O. J. Melvin, Chairman of the Board and recent past chairman of the Academy; the signally respected Dr. Marguerite Thoma and Dr. Richard M. Hall, past chairman of the Academy.

Honorable mention is deserved by other members outside of the Official Family. Dr. Needles has been most generous throughout the year in extending his valuable cooperation. We owe Dr. Needles and those local aids who assisted the Doctor great thanks for their tireless efforts on local Academy arrangements, and for extending the Board of Examiners the use of the College facilities for these examinations.

And now in concluding this address, I want you to know how

deeply I appreciate the great honor you have bestowed with this high office which will soon be relinquished to one yet to be chosen who I am sure will prove a most worthy successor, one who will use these accomplishments as stepping stones for far greater Academy progress.

Let those who carry on make of this Academy a "beacon light" to guide aspiring optometrists from near and far to a haven of learning, to advanced standards of practice, to a fuller service to its membership, to the profession at large and to our public.

DR. DON RODNEY PAINE
NATIONAL BANK OF TOPEKA BLDG.
TOPEKA, KANSAS

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CONTACT LENSES AND THE ART OF MAKE-UP

To the majority of optometrists, contact lenses are regarded as sub-normal vision aids and nothing more. In this particular they take their place with telescopic spectacles and are used only in those cases in which vision cannot be raised to satisfactory levels by other simpler means. This is in part due to the former difficulties encountered in properly prescribing these aids to sub-normal vision and also to the normal professional inertia encountered in the development of new techniques which may in part supplant old ones.

That progress is being made among optometrists in the technique of using and fitting contact lenses none can deny. It remains, however, for the Beverly Hills optometrist Greenspoon to put these lenses to a new and unique use. Last year, Greenspoon[1] working in conjunction with the Hollywood producer *Metro-Goldwyn-Mayer* was called upon to change the appearance of the iris color of the eyes of an actor under contract to that studio. This Greenspoon did with satisfaction using colored contact lenses.

This year, *Paramount Pictures, Incorporated,* engaged him[2] to use the same type of contact lens technique to age the appearance of the eyes of actor Orson Wells, who was playing a character part in which he finally appears as a man of considerable years. The task presented to Greenspoon was to make a pair of contact lenses which would give Wells the gray-faded blood-shot eyes of a very old man.

Dr. R. Greenspoon accomplished this by etching prominent scleral veins onto the scleral portion of the contact lens and using a faint milky solution instead of the usual saline solution within the contact lens. According to the studio, the resultant tests were excellent. The optometrist Greenspoon has developed the science of moulding and fitting the contact lens to that point wherein it now can be added to the unbelievable art of make-up. Optometrists interested in seeing these lenses in use on the silver screen may do so by attending the play "Citizen Kane."

Carel C. Koch.

PLASTIC CAST EYE SOCKET CLOSURE

The optometrist Friedman of Miami, Florida, recently had the opportunity to render post operative eye care[3] for a patient who had suffered the loss of an eye and who was seriously disfigured. The particular optometric attention given this case merits comment inasmuch as some original thinking and unique skills were brought into play by him, in the satisfactory handling of the ocular and aesthetic problems of this patient.

In 1936, as the result of an automobile accident, the patient, a

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[1] Carel C. Koch. Contact Lenses Used to Change the Appearance of the Eye. American Journal of Optometry. Vol. 16, No. 9, pp. 345-346. 1939.

[2] Letter to Editor, November 15, 1940.

[3] A. F. Friedman. The Friedman Eye for Socket Closure in Operated Cases. The Mid-West Optometric Journal. Vol. 7, No. 4, pp. 14-15. 1940.

middle aged woman, suffered injuries which necessitated the enucleation of the left eye and the orbital tissues, as well as the removal of both the upper and lower left lids. A skin graft was necessary to cover the open socket and as a result of the necessary remedial plastic surgery, the patient was left with unsightly facial scars.

As the patient also needed refractive relief for the uninjured right eye, glasses were prescribed correcting the visual problems of this eye and incorporating a plano lens before the closed socket where the left eye had been. From a visual standpoint this was satisfactory but from a cosmetic one the results were poor.

As the patient objected to the appearance of the left orbit, she suggested to Friedman that a plano frosted lens be made and substituted for the plano left lens then in use. The purpose of this being to hide the scar tissue as much as possible.

After some study Friedman felt he could improve upon the idea of merely obstructing the view of the left orbit and with the consent of the patient started to work upon a socket closure to restore the appearance of the left eye and orbit to as near normal as possible.

Plastic impressions were first made and after some work a model reproducing as near as possible the normal contour of the left orbit was finished. A cast made from dental plastics was then developed, from this model, into which was carefully placed a modified glass eye.

This cast was then firmly attached to the patient's spectacle frame by means of fine gold wires imbedded into the plastic material at inconspicuous places near the outer edge of the socket closure. These wires were of such length as to allow the cast to rest in a natural position over the disfigured orbit when the spectacles were in position on the face of the patient.

The plastic cast and gold wires were then colored to match the texture of the surrounding skin, and ophthalmic lenses of moderate absorption value were used to further eliminate the appearance of staring.

The finished results were excellent. With the appliance in place the patient's appearance was restored to a near normal, a result which was obviously gratifying to her. Friedman has developed a technique which will prove to be of value to many patients suffering from similar involvements which have heretofore necessitated the use of an eye patch or an opaque lens. In restoring the cosmetic appearance of these patients,

by following the techniques of Friedman, optometrists can perform a useful service indeed to this small but seriously handicapped group.

Carel C. Koch.

PRISMATIC TREATMENT OF MYOPIA

In 1938, before the American Academy of Optometry, Dr. Ida Feinbloom presented her views on the correction of myopia.[1] She questioned the value to the patient of orthoptics and prismatic corrections in these myopic cases, pointing out that (1) an analysis of the subject indicates, that while it has been suggested that the use of base-in prism corrections and orthoptic exercises will retard and reduce myopia there is little experimental evidence to support this, and (2) the belief that the wearing of glasses tends to retard, reduce or correct myopia is based on but slight clinical evidence and almost no experimental evidence.

From the standpoint of pure research, Feinbloom is in part correct. The technical controlled experimental work done in the field of myopic treatment, with either concave lenses alone or with base-in prismatic concave corrections adds little to our knowledge of the subject because of the dearth of this controlled experimental work. The same is true when the treatment of myopia is weighed in the light of orthoptic treatment wherein abduction is stimulated, if this is possible,[2,3] by means of base-in prism exercises, or in which adduction is inhibited or repressed by the use of these techniques. Here too, we find a lack of controlled experimental evidence upon which to base the use of these prophylactic measures in myopia. Yet the fact that much controlled experimental evidence does not exist, does not necessarily condemn the clinical practice of attempting to assist these cases by the use of these prismatic lens and orthoptic therapies.

Successful controlled experimental research in the field of this particular optometric therapy is difficult to accomplish because of the time element involved. Cases of myopia must be kept under observation for years and the job of keeping groups of controls and groups of clinical subjects together for long periods of time while experimental work is

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[1] Ida Feinbloom. The Effect of the Wearing of Glasses on Myopia. American Journal of Optometry. Vol. 16, No. 8, pp. 282-300. 1939.

[2] William J. Tait. Further Studies of the Fusional Convergence Amplitude. Part II. American Journal of Optometry. Vol. 13, No. 3, pp. 92-99. 1936.

[3] William J. Tait. Further Studies of the Fusional Convergence Amplitude. Part III. American Journal of Optometry. Vol. 14, No. 1, pp. 4-11. 1937.

being done is almost impossible. We must therefore turn to the non-controlled clinical case reports for what knowledge we possess of this subject.

While it is true that the non-controlled clinical findings of the individual practitioner are of less value perhaps than the controlled experimental findings of the laboratory worker, the former, nevertheless, cannot be brushed aside as being of little or no value. In fact these clinical findings are of considerable value in indicating at least the possibilities of any procedure and it must also be understood that all of the work done by various branches of the healing arts is to a very great extent supported on the records of their clinical evidence which in turn is only at best, in part supported, by experimental research.

Drakeford,[4] too, like Feinbloom, questions the value to the patient in the use of optometric prismatic or orthoptic treatment therapies in myopic cases. Nevertheless much clinical evidence has accumulated which certainly indicates that in some cases at least that these procedures are of value. Bateman,[5,6] Best,[7] Courlander,[8] Pascal[9] and Thoma[10] have all recently submitted opinions indicating that they had confidence in these treatment modalities. The writer[11] too, has quoted a number of other optometrists who have used these techniques with success and whose clinical findings have become part of our literature.

Walker,[12] too, felt these myopic treatment techniques to be of value. He has recently presented a group of 16 case reports in which all patients have shown some improvement in their myopia since 1936. Walker's

[4] J. H. Drakeford. An Opinion on the Meaning of Colored Miral Reflexes and on Myopia. American Journal of Optometry. Vol. 14, No. 1, pp. 1-3. 1937.

[5] Eric Bateman. Pseudo-Myopia. American Journal of Optometry. Vol. 14, No. 3, pp. 94-96. 1937.

[6] Eric Bateman. Report on Three Cases of Progressive Myopia and One Case of Hyperphoria. American Journal of Optometry. Vol. 14, No. 7, pp. 269-272. 1937.

[7] Robert T. Best. Myopia. American Journal of Optometry. Vol. 13, No. 1, pp. 17-26. 1936.

[8] H. Courlander. Prevention and Correction of Occupational Myopia. American Journal of Optometry. Vol. 15, No. 1, pp. 6-16. 1938.

[9] J. I. Pascal. Origins and Treatment of Progressive Myopia. American Journal of Optometry. Vol. 17, No. 8, pp. 351-366. 1940.

[10] M. Thoma. Reduction of Myopia. American Journal of Optometry. Vol. 17, No. 7, pp. 289-308. 1940.

[11] Carel C. Koch. A Review of Certain Ocular Cases in which Myopia was Overcorrected or in which Pseudo-Myopia was improperly diagnosed as Myopia. American Journal of Optometry. Vol. 16, No. 10, pp. 387-396. 1939.

[12] H. Walker. Treatment of Myopia. The Optician (London, England). Vol. XCIX, No. 2568, pp. 303-304. 1940.

techniques are much the same as those of the optometrists mentioned, except that he prescribes a base-in prismatic correction for near-point use only and has the patient use a second non-prismatic correction for distance wear. Like many optometrists, Walker feels that no claim should be advanced that these techniques can cure, or even more than possibly assist, in arresting the development of myopia in some cases. His experiences and those of hundreds of other optometrists, however, are sufficiently favorable to warrant continuing the use of these treatment procedures to benefit at least that group of myopic cases which seem to respond to the base-in prism and the orthoptic exercises which complement the use of these lenses.

Carel C. Koch.

TRANSACTIONS OF THE AMERICAN ACADEMY OF OPTOMETRY

by J. Fred Andreae, Secretary

A department devoted to announcements, reports, appointments, organization data, news, professional problems and ideals, as these relate to the Academy.

REPORT OF THE NINETEENTH ANNUAL MEETING OF THE ACADEMY AT CHICAGO

For many of us January first begins a new page—new resolutions and plans for the coming days of the year are uppermost in our minds. Most of these die aborning or fall by the wayside—yet those worth the effort survive and go on to a glorious fulfillment. This is exactly how we feel regarding the plans for the future of the American Academy. It is the earnest desire of those optometrists guiding its destiny that 1941 will see every practicing optometrist as one of its Fellows. The requirements for those who have been in practice fifteen years and over, are practice in the same manner and environment as the ethical dentist and physician. Those optometrists in practice less than fifteen years and more than five years are required to take a practical examination. Those in practice five years and less must take both a practical and written examination.

These requirements will be in effect until December 1942, after which time all applicants for examination, regardless of length of practice, will be required to take the practical and written examination.

The Academy held its nineteenth annual meeting in Chicago, December 8, 9 and 10, 1940. On December 6 and 7, the Examining Board of the Academy, composed of Drs. O. J. Melvin, R. M. Hall, Marguerite Thoma and Don R. Paine, conducted the annual examination given applicants for Fellowship in the Academy. These examinations were held on the campus of the Northern Illinois College of Optometry. Sixty-five applications were submitted. The Examination Board has not completed the marking of all the papers. A detailed report of work done by this examining board and its recommendations for the future, will be published in this department at a later date.

The sessions of the Academy itself were held at the Morrison Hotel. The President, Dr. Don R. Paine of Topeka, Kansas, presided, calling the Academy to order, December 8, 1940, at 10:00 A. M. Dr. Paine opened the meeting by presenting the *"Annual Address of the President"* which appears elsewhere in this issue.[1] This address was well received and accepted by the fellows present and was then referred to the Resolutions Committee for further study.

The Secretary-Treasurer Report was then presented by the Secretary, Dr. J. Fred Andreae of Baltimore, Maryland. This report was also accepted and will appear in detail, in this department, in a future issue.

During the three day session, important original technical contributions were presented to the Academy by Drs. Robert E. Bannon, R. C. Baxter, Jr., Howard C. Doane, Glenn A. Fry, Richard M. Hall, W. J. Heather, Matthew Luckiesh, Frank Moss, George A. Parkins, S. H. Shurin, Edwin H. Silver, Marguerite Thoma and Arthur P. Wheelock. These original papers, the titles of which were previously published,[2] will appear in the AMERICAN JOURNAL AND ARCHIVES OF OPTOMETRY during 1941, along with the technical discussion following the presentation of each paper.

The annual formal Round-Table Dinner of the Academy was held Monday evening, December 9. The President, Dr. Don R. Paine presided. Several guests were present at this occasion among whom was Dr. Lionel Topaz of Chicago, the publisher of the OPTOMETRIC WEEKLY.

The business session of the Academy was held on Tuesday, immediately following the Academy Luncheon, December 10. At this

[1] Page 26.
[2] Page 532. Vol. 17, No. 11. 1940. American Journal of Optometry.

business meeting the members of the Academy adopted the Report of the Examining Board presented by the Chairman of this Board, Dr. O. J. Melvin of Omaha, Nebraska. A Report designating the AMERICAN JOURNAL OF OPTOMETRY AND ARCHIVES OF THE AMERICAN ACADEMY OF OPTOMETRY as the official publication of the Academy, and outlining an editorial policy and program for this publication, was presented by Dr. R. M. Hall of Cleveland, Ohio, and adopted. This latter action is commented on in this issue.[3] This Journal thus becomes the official mouthpiece of the Academy and in addition to the technical material, will each month, acquaint its readers with the plans and accomplishments of the Academy.

Another far-reaching and important step in the development of the Academy was the adoption of a report creating an Advisory Council to assist the officers and Executive Council in the conduct of certain of the affairs of the Academy. This Advisory Council is charged with (1) the development of standardized visual tests for aviators; (2) the development of standardized visual tests for industrial workers; (3) the establishment of additional local chapters, affiliated with the Academy; (4) the establishment of local post-graduate groups for specialized study, using the Academy manual as a guide; (5) the consideration of the matter of junior Academy groups composed of senior students in optometry schools; (6) the standardization of procedures for assisting patients with sub-normal vision; (7) the gathering of data to assist the Academy in the matter of formulating plans to further existing work already done in the field of prevention of blindness; (8) the further development of the Academy on the west coast, and (9) the formulation of ways and means of cooperation with educators in setting up visual screening tests for students in elementary schools. These problems and the recommendations of the Advisory Council will be presented in greater detail in later issues of this publication.

The Nominating Committee, composed of Dr. W. S. Farmer, Chairman, of Oklahoma City, Oklahoma, Dr. A. J. Rowe of Cleveland, Ohio, and Dr. Charles Van Sluyters of Grand Rapids, Michigan, then presented their nominations for officers and members of the Executive Council. The report was adopted and the following Fellows of the Academy were elected to serve the organization for the year 1941. President, Dr. Arthur P. Wheelock of Des Moines, Iowa. Vice-President,

[3] Page 22.

Dr. Elmer E. Hotaling of New York City. Secretary-Treasurer, Dr. J. Fred Andreae of Baltimore, Maryland. Elected to the Executive Council, in addition to the officers were, Dr. Glenn Winslow of Los Angeles, California; Dr. William Greenspoon, Bluefield, West Virginia; Dr. Edward W. Dewey, Battle Creek Michigan; and Dr. C. R. Wells, Boston, Massachusetts. Chicago, Illinois, was chosen by the members, as the meeting place for the twentieth annual meeting. Next month we will acquaint you with the requirements for local Chapters of the Academy and other news of interest.

So we bring to a close our first "broadcast" from the secretary's office and wish you all a Most Prosperous and Happy New Year.

ORGANIZATION AND JURISPRUDENCE

by Clarence W. Morris

A department in which some of the organization problems of Optometry will be discussed and in which certain of the legal aspects of refractive work will be reviewed.

LEGAL ASPECTS OF VISUAL DISABILITIES

No complete book has been published since 1902 on visual economics and there is no one book which deals extensively with the fundamental principles of medicolegal ophthalmology. The two subjects, however, are very completely covered by Snell[1] whose new contribution to the literature of these fields of ocular work is both timely and authoritative.

This new work by Snell is divided into three sections. Part 1 deals with the essential principles of medical jurisprudence and an analysis of various compensation laws as these relate to visual disabilities. One chapter is devoted to a discussion of the medical witness, various types of evidence and court procedure. Another chapter deals with legal aspects of the confidential relation between patient and doctor in ophthalmological practice. There is an extended discussion of the subject of malpractice suits and how to avoid these. Snell also presents an analysis

[1] Albert C. Snell. A Treatise on Medicolegal Ophthalmology. C. V. Mosby Company. St. Louis. 1940.

of state and federal compensation laws regarding vision and a discussion of proposed methods for evaluation of visual disabilities.

The second portion of this book deals with the proper evaluation of visual disabilities by determination of fractional parts of vision. Four chapters are devoted to various aspects of visual acuity including percentage evaluation of visual perception. This will be discussed further in this department in coming issues of this journal. There are also chapters devoted to determination of means for measuring peripheral vision, muscular functions and binocular vision.

The third portion deals with the practical application of the visual efficiency computations necessary to medicolegal practices. The subjects covered include the clinical study of functional efficiency values as a basis for indemnification; the relative values of near and distance visual acuity. An exceedingly valuable chapter has been added by Snell having to do with a discussion of malingering.

This book is of particular interest to members of state optometric examining boards as these are engaged in litigation from time to time. Officers of optometric associations and societies, too, will find much of value as will the average practicing optometrist, particularly those who have as patients many employees of large corporations. Cases of malingering and cases involving compensation may from time to time present themselves to optometrists, and while the optometrist may not consider himself an authority on these matters, this new work of Snell will assist in counseling him as to his own course of action and that of his patient.

PROCEDURE AND INSTRUMENTATION

by Guy L. DuPlessis

A department wherein discussions will be carried on relative to the value of various experimental and clinical techniques as employed by practicing optometrists, and also in which the instruments used by optometrists in various phases of their work, will be subjected to some critical evaluation

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CHAPMAN-COOK SPEED OF READING TESTS

The Chapman-Cook Speed of Reading Test consists of two forms, either one of which can be used to test the reading speed of a subject. Forms A and B are said to be equivalent and differ only in the text

used. On the front of the forms, are printed directions for use which may be read by the tester or by the testee to familiarize himself with the procedure. The charts also carry norms for from the fourth to the eighth grade. On the reverse of these forms are thirty paragraphs of thirty words each, thus making the whole nine hundred words. The phrasing is simple and adequate for the lower grades. This simplicity is no objection to higher grades. Comprehension is assured by an erroneous or irrelevant word in each paragraph, as in the following example:

> "There was a fire last night, and five houses were burned to the ground. It all happened because someone was careless and threw a nail in the waste-paper basket."

As the subject reads he is to strike out the irrelevant word, in this case "nail," with a pencil. Unless he reads the whole paragraph in an understanding manner he will fail to catch the erroneous word. The time allowed for grade school students is two and a half minutes. The number of words read per minute can be found by the following calculation:

$$\frac{\text{Number of paragraphs read correctly} \times 30}{2.5} = \text{words per minute.}$$

Dr. Miles A. Tinker of the University of Minnesota has supplied me with norms of sophomore students. These figures are based on tests made on 918 students by the Department of General Psychology in October 1930. These norms are somewhat high for an adult non-university population.

Following are presented for the reader's convenience speed figures with reading time allowances of 2½ minutes and 1¾ minutes.

Form A or B Paragraphs	Words per Min. 2½ Min. Allow.	Words per Min. 1¾ Min. Allow.	Sophomore Centile
30	360	515	100
29	349	497	98
28	336	480	97
27	324	462	96
26	312	446	94
25	300	428	92
24	288	411	89
23	276	392	85
22	264	377	78
21	252	360	72
20	240	343	64
19	228	325	57
18	216	309	47
17	204	281	37

16	192	274	28
15	180	257	22
14	168	240	12
13	156	223	8
12	144	205	4
11	134	188	2
10	120	171	2
9	108	154	1
8	96	137	1

Explanation

The first column is the number of paragraphs read within the period allowed. The second column is the resulting speed in words per minute with 2½ minutes allowance. The third column is the speed with a time allowance of 1¾ minutes. The fourth column applies only to the speeds in the third column and signifies that if for instance a sophomore read 28 paragraphs in the allotted time of 1¾ minutes, 97% of other sophomores tested had lower scores and only 3% had scores above his.

This information is not part of the Chapman-Cook form. However, the scores for lower grades are printed on the form and are to be interpreted as in the following example: If an individual tested gets a score of sixteen paragraphs in 2½ minutes, he is at the median for eighth grade readers, slightly above the median for seventh grade readers, etc. Chief advantage of the Chapman-Cook forms is that it produces a reasonably true measure of reading speed, and is satisfactorily reliable for comparison purposes as for instance, before and after visual correction.

Another advantage is, that it represents silent reading speed and is not dependent on oral reading or the imaginativeness of the individual for a check up on comprehension. The forms are inexpensive and can be secured from the Educational Test Bureau, Inc., who maintain offices in Minneapolis, Nashville, and Philadelphia.

AMBLYOPIC EXERCISES

The *American Optical Company* has available inexpensive amblyopic exercise charts for home use. These consist of three sets: A, B and C for vision less than 10/200, up to 20/200 and better than 20/200 respectively. With the sets are included tracing papers, eye patches and patient's instructions. The patient reports with his tracings and pro-

ceeds from A to C sets as the visual acuity improves. The chief advantage of this method is systematic concentration of perception with the amblyopic eye, attention being a principal factor of cure in amblyopia ex anopsia.

AFTER-IMAGE TESTER

This device was originally suggested by Hering. It had seldom been used in this country when the late Bielschowsky introduced it at Dartmouth. Originally, it consisted of a long filament lamp mounted on a stand. The lamp was pivoted at its mid-point, and secured to this pivot by a strap with an aperture to be used for fixation. The *American Optical Company* version is essentially the same except that it is a table model, and the lamp consists of the new "luminite" bulb operating from a transformer concealed in the base. The lamp can be turned and placed vertically or horizontally.

This device is used for the study of squint by means of after-images. When fixation of the center spot by, say, the right eye is maintained for 10 seconds with the lamp in the vertical position, the left eye being covered, upon looking up in a lighted room a negative after-image of the vertical lamp will be seen. If in a darkened room, a positive after-image will be observed.

If the left eye is then immediately made to fixate the lamp in the horizontal position, the right eye being covered, then two images will be seen: A vertical after-image as seen by the left eye and a horizontal after-image as seen by the right eye.

When retinal correspondence is normal, the fixation point of each line corresponds with the macula of each eye and the two lines therefore form a cross. If, however, there is a deviation, preventing simultaneous binocular macular fixation, the lines may overlap elsewhere than at the center or may be entirely separated. It thus follows that by this method some measure of squint can be made and its type determined.

Another advantage is that changes in the deviation can be observed for different positions of regard, thus giving valuable clues as to the nature of the squint. It should be born in mind that the relative displacement of the two lines is along the visual axii and that said dis-

placement, be it vertical, horizontal or sagittal, corresponds to the displacement of the eyes in bilateral vision.

By tangential measurement, the squint can be determined with a fair degree of accuracy. Many technics will suggest themselves to the user as he becomes familiar with the use of this simple instrument. The *American Optical Company* is to be congratulated in making available to the profession this highly useful device at comparatively little cost.

THE MASTER OPHTHALMOGRAPH

One objection to the use of the ophthalmograph for diagnostic myologic purposes in a busy practice has been the delay of developing the film together with the time involved and inconvenience of loading the film cassette. This is obviated in the new *American Optical Company* Master Ophthalmograph. This instrument is almost entirely automatic in operation and in eight minutes delivers the processed film showing the patient's eye movements as well as the optometrist's written notation pertaining to the case. This data is written or printed on a card which is then also photographed, thus permitting easy identification of the film strip.

The procedure is as usual in the older models of ophthalmographs, but for each test made, the device uses a specific length of film. After exposure the camera stops automatically. The film is then fed into developing tanks and through drying rolls where the excess liquid is pressed off. The film can then be handled for inspection. Other features are, silent mechanism and a constant drive motor which it is claimed is unaffected by line voltage fluctuations. The processing powders as supplied by the makers come in exact quantities for the size of tanks employed. This new piece of equipment is designed to simplify the procedure of eye movement photography for clinical use and should prove popular among optometrists who are interested in this method of myologic analysis.

BOOK NOTICES

PRACTICING OPTOMETRY THROUGH THE KEY HOLE. Matthew O. Ranoe, Opt.D. Published by the author, 816 Nicollet Ave., Minneapolis, Minn. 54 pages, paper covers, $5.00.

The author questions the accepted theory that accommodation and convergence employed for any finite fixation point are equal. He contends that accommodation and convergence are equal only when the visual fixation point is directly in front of the observer and on the eye level. In Ranoe's opinion, this is the alleged "key hole" through which all ocular activity must be carried on if the functions of accommodation and convergence maintain an absolute parity. Ranoe believes that the unequal demands upon accommodation and convergence, due to eccentric fixation in vocational activities is the cause of phorias and other ocular discomforts. He measures these phorias induced by eccentric fixation upon a nine point phoriometer. He has raised questions which may require extensive physiological research for obtaining an exact answer. Perhaps when the truth regarding the relative values of acccommodation and convergence has been scientifically determined in the laboratories, it may then become advisable to continue this study in optometric clinics to determine the practical value of these theoretical propositions in routine optometric practice. C.W.M.

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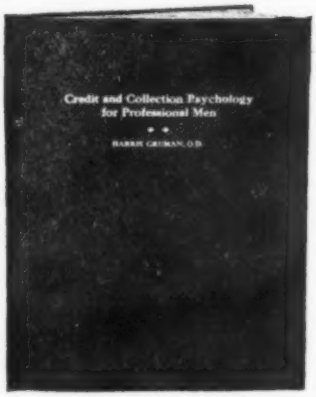
CREDIT AND COLLECTION PSYCHOLOGY FOR PROFESSIONAL MEN

By HARRIS GRUMAN, O.D.

The first comprehensive presentation of the subject ever written for the optometric profession.

The author, Dr. Harris Gruman, of Lebanon, Pa., is not only a highly successful optometrist of many years standing, but in addition, he holds a B.S. in Economics from the Wharton School of Finance and Commerce, University of Pennsylvania. He taught economics before entering the practice of optometry.

The book contains no high-spun theories. It deals with the professional manner in which to handle the "credit" and "collection" problems of the practicing optometrist.



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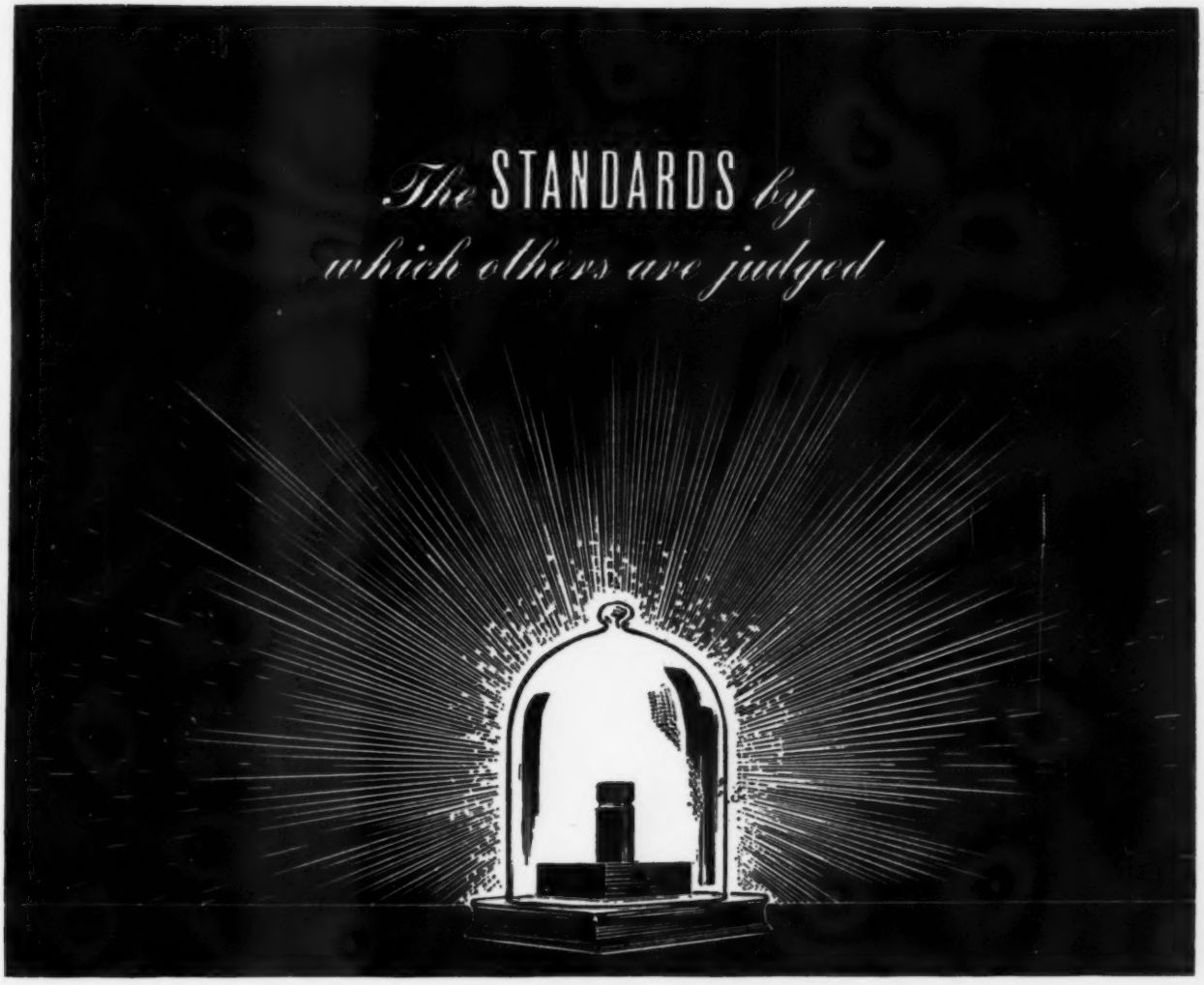

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